

B2 Sub  
CMB  
ethylene/alpha-olefin copolymer having a density of less than about 0.915 g/cm<sup>3</sup> together make up at least 70 percent of the total weight of the layer.

---

B3  
15. The patch bag according to Claims 3, wherein the first heat-shrinkable film has an indexed energy to break of at least 0.6 Joules per mil.

---

## REMARKS

### I. The Pending Claims and the Amendments to the Claims

With the entry of the above amendments, the pending claims are Claims 1 and 3-25. Claim 2 stands canceled. Claim 1 is the only pending independent claim. Claim 1 has been amended to recite the first heat shrinkable film as comprising a blend of the (A) ethylene/alpha-olefin copolymer having a density greater than about 0.915 g/cm<sup>3</sup> and the (B) heterogeneous ethylene/alpha-olefin copolymer having a density less than about 0.915 g/cm<sup>3</sup>. This feature is disclosed in the specification at, for example, Page 3 lines 14-19. Claim 1 has also been amended to recite the amount of the ethylene/alpha-olefin copolymer having a density greater than about 0.915 g/cm<sup>3</sup> in terms of a percentage of the weight of the blend, rather than based on the weight of the film. Likewise, Claim 1 has been amended to recite the amount of the heterogeneous ethylene/alpha-olefin copolymer having a density less than about 0.915 g/cm<sup>3</sup> in terms of a percentage of the weight of the blend, rather than based on the weight of the film. Claim 1 has been amended with respect to the recitation of the amount of the heterogeneous ethylene/alpha-olefin copolymer having a density less than about 0.915 g/cm<sup>3</sup> in the blend, i.e., from 5 to 95 percent to 21 to 95 percent. Support for all



these amendments can be found in the specification at, for example, Page 3 lines 1-13. Finally, Claim 1 has been amended to recite the patch as being adhered to the bag with an adhesive or corona treatment. Support for this amendment can be found in the specification at, for example, Page 22, lines 3-4.

Claim 3 has been amended in a manner similar to the amendments to Claim 1. The amendments to Claim 3 are also supported by the specification at, for example, Page 3 lines 1-13.

Claim 15 has been amended by the deletion of the phrase “impact strength” and the substitution therefor of the language “indexed energy to break”. Support for this amendment can be found in, for example, Table VIII on Page 40 of Applicants’ specification, which shows that the “J/mil” units recited in Claim 15 (as filed) correspond with “indexed energy to break”.

The amendments to the claims include no new matter.

## II. The Rejection of Claim 15 under 35 USC 112, Second Paragraph

In Paragraph 2 of the 14 May office action, Claim 15 is rejected under 35 USC 112, second paragraph, as indefinite. The office action states that it is unclear whether the impact strength is equivalent to the puncture resistance.

In response, Applicants first point out that Claim 15 has been amended to recite the first heat-shrinkable film as having an “indexed energy to break of at least 0.6 Joules per mil.” Applicants direct attention to Table VIII, on page 40 of the specification of their application. One of the columns in Table VIII is stated as being “Indexed Energy to Break (J/mil)”, which is the energy to break in Joules per mil of film thickness, i.e., normalized for the thickness of the film. That is, it can be seen



that the Indexed Energy to Break was calculated from the “Impact Energy to Break (J)” divided by the “Thickness (mil)”.

Page 37 lines 10-12 of the specification state that instrumented impact is determined using ASTM D3763. A copy of ASTM D3763 is provided herewith. The procedure of ASTM D3763 was used to determine all of the various impact strength values reported in Table VIII. Applicants contend that those of skill in the art know how to carry out ASTM D3763 in order to determine the Energy to Break and how to use that value to calculate the Indexed Energy to Break. As Claim 15 recites impact strength in units corresponding with Indexed Energy to Break, the issue of whether impact strength is the equivalent of puncture resistance is rendered moot, as the claim recites indexed energy to break, not puncture resistance or impact strength. Accordingly, Applicants respectfully request that this ground of rejection be withdrawn, in view of the amendment and arguments above.

### III. The Rejection of Claims 1-8, 10-11, 14, and 16-24 as Obvious over FERGUSON ‘403 in view of OYA et al

In Paragraph 4 of the 14 May office action, Claims 1-8, 10-11, 14, and 16-24 are rejected as obvious over U.S. Patent No. 4,755,403, to Ferguson (“FERGUSON ‘403”) in view of Japanese Abstract 03024954 to Oya et al (“OYA et al”). The office action states that FERGUSON ‘403 teaches a heat-shrinkable bag having a heat-shrinkable patch thereon, with the patch made from linear low density polyethylene (LLDPE) and ethylene/vinyl acetate copolymer (EVA), with outer layers of the patch film containing 87% LLDPE, with the outer layers further containing EVA and pigment. The Office Action acknowledges that FERGUSON ‘403 fails to teach a blend of LLDPE and VLDPE, but the Office Action goes on to state that OYA et al discloses a multilayer film of improved



stretch, the film having a seal layer containing a blend of 55% or more VLDPE below 0.910 g/cc with up to 45% LLDPE having a density of 0.90-0.93 g/cc. The Office Action concludes that because OYA et al teaches that the layer with the VLDPE/LLDPE blend is heat-sealable, it would have been obvious to substitute such a blend for the LLDPE layer of FERGUSON '403.

In response, Applicants contend that Claims 1-8, 10-11, 14, and 16-24 are patentable over FERGUSON '403 in view of OYA et al, for several reasons. First, FERGUSON '403 states:

It has surprisingly been found that the increased strength and toughness of the patch according to the present invention is greatly enhanced by the use of linear low density polyethylene.

The office action does not refer to any specific disclosure in OYA et al which teaches or suggests that VLDPE would be a satisfactory substitute for the surprising strength and toughness of LLDPE when used in a patch film. Thus, one of skill in the art, reading FERGUSON '403 and OYA et al, would not have been led to substitute VLDPE for any of the LLDPE in FERGUSON '403, as to make such a substitution would have the potential to jeopardize the strength and toughness of the resulting patch. Applicants contend that whether VLDPE will meet or exceed the performance of LLDPE in a patch is chemically unpredictable. It simply must be experimented with in order to be determined.

The office action set forth improving (a) the stretchability and (b) the patch-to-bag seal as motivations for making the substitution of VLDPE for LLDPE in the patch film. A heat-shrinkable patch film is significantly thicker than a "stretch film." Hence, one of skill in the art would not be motivated to make the substitution of VLDPE for LLDPE in order to improve stretch performance of a patch film.

As to improved sealability, Applicants' direct attention to the fact that their claims have been amended to recite the patch as being adhered to the bag with an adhesive or corona treatment, not



heat sealing. One of skill in the art would not use the improved sealing disclosure in OYA et al to substitute VLDPE for some of the LLDPE of FERGUSON '403, to make a patch bag in which the patch is adhered to the bag with corona treatment or an adhesive. If the patch is not adhered by heat sealing, then one of skill in the art would not have this reason for modifying the film of FERGUSON '403 to improve its heat-sealability in the manner taught by OYA et al.

Based on all of the arguments set forth above, Applicants contend that FERGUSON '403 in view of OYA et al does not rise to the level of a prima facie case of obviousness of any one or more of Claims 1-8, 10-11, 14, and 16-24, as amended above.

#### IV. The Rejection of Claims 1-8 and 10-24 as Obvious over FERGUSON '403 in view of FERGUSON '856 and OYA et al

In Paragraph 5 of the 14 May office action, Claims 1-8 and 10-24 are rejected as obvious over FERGUSON '403 in view of U.S. Patent No. 4,640,856, to Ferguson et al ("FERGUSON et al '856") and OYA et al. The office action relies on FERGUSON '403 as set forth above, and states that FERGUSON et al '856 discloses bags made from films having improved shrink, tear, barrier, and puncture resistance, such bags comprising a layer of VLDPE and a layer containing a blend of VLDPE and LLDPE, and that such films have high impact strength. The office action concludes that it would have been obvious to have used FERGUSON et al '856 to obtain a patch of improved oxygen barrier and puncture resistance. The office action acknowledges that FERGUSON et al '856 fails to teach the specific claimed amounts of VLDPE and LLDPE, but that OYA et al teaches the claimed specific VLDPE/LLDPE blend, and that it would have been obvious to have used the blend of OYA et al as the VLDPE/LLDPE blend of FERGUSON et al '856 in the patch film of



FERGUSON '403, in order to obtain a patch bag with good heat and puncture resistance, and to use the blend in a monolayer patch to obtain a less expensive patch bag.

In response, Applicants contend that Claims 1-8 and 10-24 as amended above are patentable over FERGUSON '403 in view of FERGUSON et al '856 and OYA et al. Applicants note that FERGUSON et al '856 has examples in which films containing VLDPE exhibit higher ball burst strength than control films containing EVA. Thus, Applicants contend that one of skill in the art would take from FERGUSON et al '856 that ball burst impact strength would be increased by substituting VLDPE for EVA. Applicants point out that although FERGUSON et al '856 does teach a blend of VLDPE and LLDPE, there does not appear to be any teaching in FERGUSON et al '856 to substitute VLDPE *for LLDPE*.

For the reasons pointed out in the paragraph immediately above, Applicants contend that at most one of skill in the art would have been motivated only to substitute VLDPE for the EVA in the patch of FERGUSON '403, i.e., not to substitute VLDPE for LLDPE in the patch film of FERGUSON '403. As such, at most one would have 20% VLDPE in a blend with LLDPE in the patch of FERGUSON '403. See Column 2 lines 11-23 of FERGUSON '403. However, Applicants' claims have been amended to recite the blend as containing from 21% to 95% of the heterogeneous ethylene/alpha-olefin having a density of less than 0.915 g/cc. Applicants contend that there is no teaching or suggestion in FERGUSON et al '856 which would result in more than 20% VLDPE in a blend with LLDPE.

Moreover, for the various reasons set forth above under heading "III", above, one of skill in the art would not have used the blend of OYA et al to increase the amount of VLDPE in the blend



above 20 percent. Again, Applicant's claims recite the patch as being adhered to the bag with an adhesive or with corona treatment, not with a heat seal.

Based on all of the arguments set forth above, Applicants contend that FERGUSON '403 in view of FERGUSON et al '856 and OYA et al does not rise to the level of a prima facie case of obviousness of any one or more of Claims 1-8, 10-11, 14, and 16-24, as amended above.

V. The Rejection of Claims 1-7, 9, and 16 as Obvious over FERGUSON '403  
in view of WILHOIT and OYA et al

In Paragraph 6 of the 14 May office action, Claims 1-7, 9, and 16 are rejected as obvious over FERGUSON '403 in view of U.S. Patent No. 5,283,128, to Wilhoit ("WILHOIT") and OYA et al. The office action relies on FERGUSON '403 as set forth above, and further states that OYA et al fails to teach the addition of the homogeneous ethylene/alpha-olefin copolymer to the VLDPE/LLDPE blend, but that WILHOIT teaches three component blend of VLDPE & LLDPE, EVA, and plastomer below 0.90g/cc provide desirable elastomeric and crystalline properties with densities in the same range as VLDPE, with the plastomer providing higher shrink to the film.

At the outset, Applicants note that while the office action relies upon WILHOIT et al for disclosure of homogeneous ethylene/alpha-olefin copolymer, most of the rejected claims do not recite this feature (i.e., only Claims 4 and 9 recite homogeneous ethylene/alpha-olefin copolymer, with Claims 1, 3, 5-7, and 16 being merely open to the inclusion of homogeneous ethylene/alpha-olefin copolymer, but not requiring homogeneous ethylene/alpha-olefin copolymer). Thus, Applicants are puzzled as to why WILHOIT is being relied upon for homogeneous ethylene/alpha-olefin copolymer in a rejection of claims not expressly reciting homogeneous ethylene/alpha-olefin copolymer.



However, in response to this rejection Applicants contend that Claims 1-7, 9, and 16 as amended above are patentable over FERGUSON '403 in view of WILHOIT and OYA et al. While Applicants acknowledge that WILHOIT discloses homogeneous ethylene/alpha-olefin copolymer in the form of a plastomer which is present in a heat-shrinkable film, it still remains unpredictable (for all the reasons argued above) whether VLDPE as disclosed in WILHOIT and/or OYA et al will perform comparably with LLDPE in a patch film. Moreover, OYA et al does not provide motivation for substituting LLDPE with VLDPE, as Applicants' claims, as amended above, recite the patch as being adhered to the bag with an adhesive or with corona treatment. Accordingly, Applicants contend that FERGUSON '403 in view of WILHOIT and OYA et al does not rise to the level of a prima facie case of obviousness of any one or more of Claims 1-7, 9, and 16.

#### VI. Applicants' Specification Provides Evidence of Unexpected Results

Table VIII of Applicants' specification shows that a patch bag having a patch film made from a blend of 75% VLDPE with 25% LLDPE exhibited a 25% failure rate in a Standard Rib Drop Test, compared with a 33.3% failure rate for a patch film made from 95%VLDPE, and a 37.5% failure rate for a patch film made from 95% LLDPE. Thus, it is apparent that a blend of VLDPE and LLDPE produces better patch performance than VLDPE alone or LLDPE alone. This is synergistic and surprising over FERGUSON '403. Applicants are entitled to a patent for their invention.



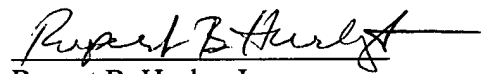
VII. Claim 25 Was Not Accounted for in the First Office Action

None of the various rejections included a rejection of Claim 25. As a result, Applicants contend that Claim 25 is in condition for allowance, and Applicants respectfully request that the next communication from the Examiner include a statement on the status of Claim 25.

VIII. Conclusion

Based on the amendments and arguments set forth above, Applicants respectfully request reconsideration of the patentability Claims 1 and 2-25. Should there be any questions or comments, the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully Submitted,



Rupert B. Hurley Jr.

Reg. No. 29,313

Attorney for Applicants

(803) 433-3247

October 15, 2001

Enclosures: ASTM D3763

Appendix



## APPENDIX

The amendments to the claims are set forth below.

1. (Twice Amended) A patch bag comprising a heat-shrinkable patch adhered to a heat-shrinkable bag, the heat-shrinkable patch comprising a first heat-shrinkable film and the heat-shrinkable bag comprising a second heat-shrinkable film, the first heat-shrinkable film comprising a blend of:

- A) ethylene/alpha-olefin copolymer having a density greater than about  $0.915 \text{ g/cm}^3$ , present in an amount of at least about 5 percent based on a total weight of the [first film] blend; and
- B) heterogeneous ethylene/alpha-olefin copolymer having a density of less than about  $0.915 \text{ g/cm}^3$ , present in an amount of at least about [5] 21 percent, based on the total weight of the [first film] blend; and

wherein the ethylene/alpha-olefin copolymer having a density greater than about  $0.915 \text{ g/cm}^3$  and heterogeneous ethylene/alpha-olefin copolymer having a density of less than about  $0.915 \text{ g/cm}^3$  together make up at least 70 percent of the total weight of the first film, and wherein the patch is adhered to the bag with an adhesive or corona treatment.

3. (Twice Amended) The patch bag according to Claim 1, [wherein the first heat shrinkable film has a layer containing a blend of the ethylene/alpha-olefin copolymer having a density greater than about  $0.915 \text{ g/cm}^3$  and the heterogeneous ethylene/alpha-olefin copolymer having a density of less than about  $0.915 \text{ g/cm}^3$ ,] wherein the ethylene/alpha-olefin copolymer having a density greater than about  $0.915 \text{ g/cm}^3$  is present in the blend in an amount of from about 5 to 95 percent, based on the weight of the [layer] blend, and the heterogeneous ethylene/alpha-



olefin copolymer having a density of less than about  $0.915 \text{ g/cm}^3$  is present in the blend in an amount of from about [5] 30 to 95 percent, based on the weight of the [layer] blend, and wherein the ethylene/alpha-olefin copolymer having a density greater than about  $0.915 \text{ g/cm}^3$  and the heterogeneous ethylene/alpha-olefin copolymer having a density of less than about  $0.915 \text{ g/cm}^3$  together make up at least 70 percent of the total weight of the layer.

15. (Once Amended) The patch bag according to Claims 3, wherein the first heat-shrinkable film has an [impact strength] indexed energy to break of at least 0.6 Joules per mil.